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Claims:

1       1. A compostable and/or degradable polymer  
2 composition, comprising:

3                 polymer (A) which is a polyesteramide copolymer;  
4                 polymer (B) which is at least one polymer selected from  
5 the group consisting of polyethylenvinyl alcohol, polyvinyl  
6 alcohol, polyester, starch, starch derivative, cellulose,  
7 polyethylene glycol, chitin, amylose, amylopectin, starch  
8 derivatized with ethyleneimine, cellulose derivatized with  
9 ethyleneimine, polysaccharides derivatized with  
10 ethyleneimine, lignin derivatized with ethyleneimine,  
11 farinaceous materials derivatized with ethyleneimine and  
12 mixtures thereof;

13                 component (C) which is a plasticizer; and  
14                 component (D) which is a crosslinking agent;

15                 wherein the polymer composition comprises 0 to 60 wt%  
16 of polymer (B), 0 to 25 wt% of component (C), and 0 to 5 wt%  
17 of component (D);

18                 wherein all wt% values are based upon the total weight  
19 of the polymer composition; and

20                 with the proviso that the polymer composition must  
21 contain at least one of polymer (B) and component (D).

1       2. The compostable and/or degradable polymer  
2 composition according to claim 1, wherein the amide content  
3 is 80 to 20 wt% of the polyesteramide copolymer.

1       3. The compostable and/or degradable polymer  
2 composition according to claim 1, wherein the ester content  
3 is 20 to 80 wt% of the polyesteramide copolymer.

1                  4. The compostable and/or degradable polymer  
2 composition according to claim 1, wherein polymer (A) is  
3 prepared from at least one of the following sets of  
4 reactants:

5                  i) cyclic amide, dicarboxylic acid or ester and  
6 aliphatic diol;

7                  ii) aliphatic polyamide and a cyclic ester, a diol  
8 or both;

9                  iii) aliphatic diamine, dicarboxylic acid or ester  
10 and aliphatic diol;

11                  iv) cyclic amide, dicarboxylic acid or ester,  
12 tricarboxylic acid or ester, and aliphatic diol;

13                  v) cyclic amide and cyclic ester;

14                  vi) aminocarboxylic acid, dicarboxylic acid or  
15 ester and aliphatic diol;

16                  vii) aliphatic diamine and/or triamine, aliphatic  
17 diol, dicarboxylic acid or ester and cyclic amide;

18                  viii) aliphatic polyamide and polyester;

19                  ix) polymerized vegetable oil and polyester,  
20 aliphatic diol or both;

21                  x) aliphatic diamine and aliphatic diol;

22                  xi) cyclic amide, aminocarboxylic acid, and  
23 hydroxycarboxylic acid;

24                  xii) cyclic amide and hydroxycarboxylic acid;

25                  xiii) aliphatic polyamide and hydroxycarboxylic  
26 acid;

27                  xiv) cyclic amide, cyclic ester, dicarboxylic acid  
28 or ester and aliphatic diol;

29                  xv) a triol/diol/aliphatic dicarboxylic acid  
30 crosspolymer and a

31 polyamide; and

32                   xvi) triol, diol, aliphatic dicarboxylic acid and  
33 a cyclic amide.

1               5. The compostable and/or degradable polymer  
2 composition according to claim 4, wherein polymer (A) is  
3 prepared from caprolactam and caprolactone.

1               6. The compostable and/or degradable polymer  
2 composition according to claim 4, wherein polymer (A) is  
3 prepared from caprolactam and lactic acid.

1               7. The compostable and/or degradable polymer  
2 composition according to claim 4, wherein polymer (A) is  
3 prepared from caprolactam, adipic acid, and 1,4-butanediol.

1               8. The compostable and/or degradable polymer  
2 composition according to claim 4, wherein polymer (A) is  
3 prepared from hexamethylenediamine, adipic acid, and 1,4-  
4 butanediol.

1               9. The compostable and/or degradable polymer  
2 composition according to claim 4, wherein polymer (A) is  
3 prepared from polymerized vegetable oil and polyester,  
4 aliphatic diol or both.

1               10. The compostable and/or degradable polymer  
2 composition according to claim 4, wherein the cyclic amide  
3 is caprolactam, the cyclic ester is caprolactone, the  
4 dicarboxylic acid or ester is dimethylterephthalate and the  
5 aliphatic diol is selected from the group consisting of  
6 ethylene glycol and 1,4-butanediol.

1       11. The compostable and/or degradable polymer  
2 composition according to claim 4, wherein polymer (A) is  
3 prepared from the scrambling of a glycerol/diethylene  
4 glycol/adipic acid crosspolymer with nylon-6.

1       12. The compostable and/or degradable polymer  
2 composition according to claim 4, wherein polymer (A) is  
3 prepared from glycerol, diethylene glycol, adipic acid and  
4 caprolactam.

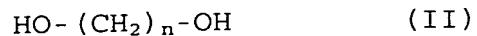
1       13. The compostable and/or degradable polymer  
2 composition according to claim 10, wherein caprolactam is  
3 20-90 wt%, caprolactone is 0-40 wt%; dimethylterephthalate  
4 is 5-40 wt%, and ethylene glycol is 5-40 wt%.

1       14. The compostable and/or degradable polymer  
2 composition according to claim 4, wherein the dicarboxylic  
3 acid is selected from Formula I:



5 where n is a whole number ranging from 2 to 6.

1       15. The compostable and/or degradable polymer  
2 composition according to claim 4, wherein the aliphatic diol  
3 is selected from Formula II:



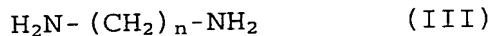
5 where n is a whole number ranging from 2 to 6.

1       16. The compostable and/or degradable polymer  
2 composition according to claim 4, wherein the cyclic amide  
3 is caprolactam.

1       17. The compostable and/or degradable polymer  
2 composition according to claim 4, wherein the aliphatic  
3 polyamide is selected from the group consisting of nylon-66  
4 and polycaprolactam.

1       18. The compostable and/or degradable polymer  
2 composition according to claim 4, wherein the cyclic ester  
3 is selected from the group consisting of caprolactone and  
4 3,6-dimethyl-1,4-dioxane-2,5-dione.

1       19. The compostable and/or degradable polymer  
2 composition according to claim 4, wherein the aliphatic  
3 diamine is selected from Formula III:



5 where n is a whole number ranging from 2 to 6.

1       20. The compostable and/or degradable polymer  
2 composition according to claim 4, wherein the  
3 aminocarboxylic acid is selected from Formula IV:



5 where n is a whole number ranging from 2 to 6.

1       21. The compostable and/or degradable polymer  
2 composition according to claim 4, wherein the  
3 hydroxycarboxylic acid is selected from Formula V:



5 where n is a whole number ranging from 2 to 6 and R is  
6 selected from the group consisting of hydrogen, methyl and  
7 ethyl.

1       22. The compostable and/or degradable polymer  
2 composition according to claim 4, wherein the polyester is

3 selected from the group consisting of polycaprolactone and  
4 polylactic acid.

1       23. The compostable and/or degradable polymer  
2 composition according to claim 1, further comprising a  
3 polyketone, polyurethane, polylactic acid, starch,  
4 polyethylene glycol or mixtures thereof.

1       24. The compostable and/or degradable polymer  
2 composition according to claim 1, wherein polymer (B) is a  
3 polyester selected from the group consisting of polylactic  
4 acid, polyhydroxyalkanoate, polyhydroxybutyrate,  
5 polyhydroxy-valerate, Biopol, polycaprolactone, polyethylene  
6 adipate, polyethylene succinate, polybutylene succinate,  
7 polyglycolic acid and copolymers and combinations thereof.

1       25. The compostable and/or degradable polymer  
2 composition according to claim 1, which includes polymer  
3 (A), polymer (B), and component (D).

1       26. The compostable and/or degradable polymer  
2 composition according to claim 25, wherein polymer (A) is a  
3 caprolactam/caprolactone copolymer or a caprolactam/lactic  
4 acid copolymer, polymer (B) is PVOH or EVOH.

1       27. The compostable and/or degradable polymer  
2 composition according to claim 1, further comprising a  
3 degrading aid.

1       28. The compostable and/or degradable polymer  
2 composition according to claim 27, wherein the degrading aid

3 is selected from the group consisting of ammonium  
4 polyphosphate and zinc pyrophosphate.

1 29. The compostable and/or degradable polymer  
2 composition according to claim 27, wherein the degrading aid  
3 is in a range of 0.1 - 5 wt%.

1 30. The compostable and/or degradable polymer  
2 composition according to claim 1, further comprising  
3 component (D) which is a crosslinking agent.

1 31. The compostable and/or degradable polymer composition  
2 according to claim 30, wherein the crosslinking agent is  
3 selected from the group consisting of a triamine, triol,  
4 jeffamine, polyethyleneimine, multifunctional amines,  
5 glycerol, sorbitol, EVOH, PVOH, triaminopyrimidines,  
6 tetraazacyclo-tetradecane, tricarboxylic acid or ester,  
7 tetracarboxylic acid or ester, methylene bis(4-phenyl  
8 isocyanate), vinyltrimethoxysilane, diethylene glycol  
9 diglycidyl ether, epichlorohydrin,  
10 1,1,3,3,5,5,7,7,9,9,11,11-dodecamethyl-1,11-bis(4-  
11 (oxiranylmethoxy)phenyl)-Hexasiloxane, 3-(trimethoxysilyl)-  
12 1-Propanamine, zinc pyrophosphate, zinc oxide and mixtures  
13 thereof.

1 32. The compostable and/or degradable polymer  
2 composition according to claim 30, wherein the crosslinking  
3 agent is selected from the group consisting of  
4 3,3-dimethoxy-7,9-dimethyl-7-((nonamethyltetra-  
5 siloxanyl)oxy))-9-((trimethylsilyl)oxy)-2,8,13-trioxa-3,7,9-  
6 trisilapentadecan-15-ol;  
7 1,1,1,3,3,5,5,7,7,9,9,11,13,15,17,19,19,

8 19-heptadecamethyl-9,11,13,15,17-pentakis(2-(7-  
9 oxabicyclo(4.1.0)hept-3-yl)ethyl)-decasiloxane;  
10 poly(oxy(1,1,3,3,5,5,7,7-octamethyl-1,7-tetrasiloxane-  
11 diyl)oxy-1,3-phenylene(phenylimino)(1,1'-biphenyl)-4,4'-  
12 diyl(phenylimino)-1,3-phenylene);  
13 1,1,3,3,5,5,7,7-octamethyl-1,7-tetrasiloxanediol  
14 diacetate;  
15 alpha-(nonamethyltetrasiloxanyl)-omega-((trimethyl-  
16 silyl)oxy)-poly(oxy(((diethylamino)oxy)methylsilylene));  
17 dodecamethyl pentasiloxane;  
18 alpha-(nonamethyltetrasiloxanyl)-omega-  
19 ((trimethylsilyl)oxy)-poly(oxy(((diethylamino)oxy)methyl-  
20 silylene)),;  
21 1,1,3,3,5,5,7,7,9,9-decamethyl-1,9-pentasiloxanediol;  
22 1,1,3,3,5,5,7,7,9,9-decamethyl-1,9-bis(4-(oxiranyl-  
23 methoxy)phenyl)-pentasiloxane;  
24 1,1,3,3,5,5,7,7,9,9,11,11-dodecamethyl-1,11-bis(4-  
25 (oxiranylmethoxy)phenyl)-hexasiloxane;  
26 1,1,3,3,5,5,7,7,9,9,11,11,13,13,13,15,15-hexadecamethyl-  
27 1,15-bis(4-(oxiranylmethoxy)phenyl)-octasiloxane;  
28 1,1,3,3,5,5,7,7,9,9,11,11,13,13,13,15,15,17,17-octadeca-  
29 methyl-1,17-bis(4-(oxiranylmethoxy)phenyl)-nonasiloxane;  
30 1,1,3,3,5,5,7,7,9,9,11,11,13,13,15,15,17,17,19,19,21,21  
31 ,23,23-tetracosamethyl-1,23-bis(4-(oxiranylmethoxy)phenyl)-  
32 dodecasiloxane;  
33 4,4'-(1,1,3,3,5,5,7,7,9,9-decamethyl-1,9-  
34 pentasiloxanediyI)bis-phenol;  
35 4,4'-(1,1,3,3,5,5,7,7,9,9,11,11-dodecamethyl-1,11-  
36 hexasiloxanediyI)bis-phenol;  
37 4,4'-(1,1,3,3,5,5,7,7,9,9,11,11,13,13,15,15-  
38 hexadecamethyl-1,15-octasiloxanediyI)bis-phenol;

39        4,4'-(1,1,3,3,5,5,7,7,9,9,11,11,13,13,15,15,17,17-  
40    octadecamethyl-1,17-nonasiloxanediyl)bis-phenol;  
41        4,4'-(1,1,3,3,5,5,7,7,9,9,11,11,13,13,15,15,17,17,  
42    19,19,21,21,23,23-tetracosamethyl-1,23-dodecasiloxane-  
43    diyl)bis-phenol;  
44        1,1,3,3,5,5,7,7-octamethyl-1,7,-tetrasiloxanediol;  
45        1-ethenyl-1,3,3,5,5,7,7-heptamethyl-1,7-tetrasiloxane-  
46    diol;  
47        1,1,3,3,5,5-hexamethyl-7,7-diphenyl-1,7-tetrasiloxane-  
48    diol;  
49        1,1,3,3,5,5,7-heptamethyl-7-(3,3,3-trifluoropropyl)-  
50    1,7-tetrasiloxanediol;  
51        1,1,3,3,5,5,7-heptamethyl-7-phenyl-1,7-tetrasiloxane-  
52    diol;  
53        N,N'-(1,1,3,3,5,5,7,7,9,9,11,11-dodecamethyl-1,11-  
54    hexasiloxanediyl)di-3,1-propanediyl)bis(N-(oxiranylmethyl)-  
55    oxiranemethanamine;  
56        1,1,3,3,5,5,7,7,9,9,11,11,13,13,15,15,17,17,19,19-  
57    eicosamethyl-1,19-bis(4-(methyl-1-(4-  
58    oxiranylmethoxy)phenyl)ethyl)phenoxy)-decasiloxane; and  
59        1,1,3,3,5,5-hexamethyl-1,5-bis(4-(1-methyl-1-(4-  
60    (oxiranylmethoxy)phenyl)ethyl)phenoxy)-trisiloxane.

1        33. The compostable and/or degradable polymer  
2    composition according to claim 31, wherein the crosslinking  
3    agent is selected from the group consisting of zinc  
4    pyrophosphate, zinc oxide and mixtures thereof.

1        34. The compostable and/or degradable polymer  
2    composition according to claim 30, wherein the crosslinking  
3    agent is incorporated at a level of 0.0 to 2.0 wt percent.

1       35. The compostable and/or degradable polymer  
2 composition according to claim 1, further comprising  
3 component (E) which is a polymer end-capped with functional  
4 groups.

1       36. The compostable and/or degradable polymer  
2 composition according to claim 35, wherein component (E) is  
3 selected from the group consisting of polyether diol,  
4 polysilylalcohol, polyesteramidepolyols, polyurethane-  
5 polyols, hydroxylated acrylate resins, polyester diols,  
6 aminopropyl-terminated polyethylene glycol, aminopropyl-  
7 terminated polypropylene glycol, end-capped methacrylate  
8 functionalized polyethyleneglycol and epichlorohydrin  
9 derivatized polyethylene glycol.

1       37. The compostable and/or degradable polymer  
2 composition according to claim 35, wherein the polyether  
3 diol is selected from the group consisting of polyethylene  
4 glycol, polyethylene ether glycol, polypropylene ether  
5 glycol, polytetramethylene ether glycol, polyhexamethylene  
6 ether glycol.

1       38. The compostable and/or degradable polymer  
2 composition according to claim 35, wherein component (E) has  
3 a molecular weight of 600 to 4000 dalton.

1       39. The compostable and/or degradable polymer  
2 composition, according to claim 1, having a spherulitic form  
3 wherein the spherulites average particle diameter ranges  
4 from 100-500  $\mu\text{m}$ .

1       40. The compostable and/or degradable polymer  
2 composition, according to claim 1, wherein polymer (B) is  
3 in a range of 1 to 60 wt% of the total composition and is  
4 selected from the group consisting of starch, starch  
5 derivative, cellulose, chitin, amylose, amylopectin and  
6 mixtures thereof.

1       41. The compostable and/or degradable polymer  
2 composition according to claim 1, wherein polymer (A) is  
3 prepared from caprolactam and caprolactone and polymer (B)  
4 is polyvinyl alcohol.

1       42. The compostable and/or degradable polymer  
2 composition according to claim 1, wherein the plasticizer  
3 component (C) is selected from the group consisting of  
4 polyethylene glycol, polypropylene glycol, polyethylene  
5 propylene glycol, glycerol, butenediol, propylene glycol,  
6 sorbitol, glycerol triacetate, methyl ricinolate, dihexyl  
7 phthalate, low molecular weight polycaprolactone diol or  
8 triol, acetyl-tri-n-butyl citrate, and combinations thereof.

1       43. A method for preparing a compostable and/or  
2 degradable polymer composition, comprising combining polymer  
3 (A) which is a polyesteramide copolymer with at least one of  
4 polymer (B) and component (D);

5       wherein polymer (B) which is at least one polymer  
6 selected from the group consisting of polyethylenvinyl  
7 alcohol, polyvinyl alcohol, polyester, starch, starch  
8 derivative, cellulose, polyethylene glycol, chitin, amylose,  
9 amylopectin, starch derivatized with ethyleneimine,  
10 cellulose derivatized with ethyleneimine, polysaccharides  
11 derivatized with ethyleneimine, lignin derivatized with

12 ethyleneimine, farinaceous materials derivatized with  
13 ethyleneimine and mixtures thereof;  
14 component (D) which is a crosslinking agent;  
15 in an amount necessary to have up to 60 wt% of polymer  
16 (B) and up to 5 wt% of component (D);  
17 wherein all wt% values are based upon the total weight  
18 of the polymer composition.

1       44. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 43,  
3 further comprising the step of preparing polymer (A) by  
4 combining at least one of the following sets of reactants:  
5             i) cyclic amide, dicarboxylic acid or ester and  
6 aliphatic diol;  
7             ii) aliphatic polyamide and a cyclic ester, a diol  
8 or both;  
9             iii) aliphatic diamine, dicarboxylic acid or ester  
10 and aliphatic diol;  
11             iv) cyclic amide, dicarboxylic acid or ester,  
12 tricarboxylic acid or ester, and aliphatic diol;  
13             v) cyclic amide and cyclic ester;  
14             vi) aminocarboxylic acid, dicarboxylic acid or  
15 ester and aliphatic diol;  
16             vii) aliphatic diamine and/or triamine, aliphatic  
17 diol, dicarboxylic acid or ester and cyclic amide;  
18             viii) aliphatic polyamide and polyester;  
19             ix) polymerized vegetable oil and polyester,  
20 aliphatic diol or both;  
21             x) aliphatic diamine and aliphatic diol;  
22             xi) cyclic amide, aminocarboxylic acid, and  
23 hydroxycarboxylic acid  
24             xii) cyclic amide and hydroxycarboxylic acid;

25               xiii) aliphatic polyamide and hydroxycarboxylic  
26 acid;  
27               xiv) cyclic amide, cyclic ester, dicarboxylic acid  
28 or ester and aliphatic diol;  
29               xv) a triol/diol/aliphatic dicarboxylic acid  
30 crosspolymer and a  
31 polyamide; and  
32               xvi) triol, diol, aliphatic dicarboxylic acid and  
33 a cyclic amide.

1               45. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 43,  
3 wherein polymer (A) is prepared by melting an aliphatic  
4 polyamide and blending at least one hydroxycarboxylic acid  
5 selected from Formula V:



6               where n is a whole number ranging from 2 to 6 and R is  
7 selected from the group consisting of hydrogen, methyl and  
8 ethyl.  
9

1               46. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 43,  
3 wherein polymer (A) is prepared by melting an aliphatic  
4 polyamide and either a polyester or cyclic ester together  
5 and mixing for greater than one minute in the melt.

1               47. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 43,  
3 wherein the preparation of polymer (A) further comprises  
4 adding tin octoate to the melted mixture.

1       48. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 43,  
3 wherein polymer (A) is prepared by combining a cyclic amide,  
4 a cyclic ester, and an anionic catalyst.

1       49. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 48,  
3 wherein the cyclic amide ranges from 90 wt% to 20 wt% and  
4 the cyclic ester ranges from 10 wt% and 80 wt%.

1       50. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 48,  
3 wherein the anionic catalyst varies between 20-5,000 ppm.

1       51. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 48,  
3 wherein the anionic catalyst is sodium methoxide and/or the  
4 sodium salt of caprolactam.

1       52. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 43,  
3 wherein polymer (A) is prepared by combining a cyclic amide,  
4 a cyclic ester, and water.

1       53. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 52,  
3 wherein the cyclic amide ranges from 98 wt% to 20 wt% and  
4 the cyclic ester ranges from 2 wt% and 80 wt%.

1       54. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 52,  
3 wherein the amount of water ranges from 1-3 wt%.

1       55. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 43, which  
3 includes a crosslinking agent.

1       56. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 55,  
3 wherein the crosslinking agent is selected from the group  
4 consisting of a triamine, triol, jeffamine,  
5 polyethyleneimine, multifunctional amines, glycerol,  
6 sorbitol, EVOH, PVOH, triaminopyrimidines, tetraazacyclo-  
7 tetradecane, tricarboxylic acid or ester, tetracarboxylic  
8 acid or ester, methylene bis(4-phenyl isocyanate),  
9 vinyltrimethoxysilane, diethylene glycol diglycidyl ether,  
10 epichlorohydrin, 1,1,3,3,5,5,7,7,9,9,11,11-dodecamethyl-  
11 1,11-bis(4-(oxiranylmethoxy)phenyl)-Hexasiloxane, 3-  
12 (trimethoxysilyl)-1-Propanamine, zinc pyrophosphate, zinc  
13 oxide and mixtures thereof.

1       57. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 55,  
3 wherein the crosslinking agent is selected from the group  
4 consisting of 3,3-dimethoxy-7,9-dimethyl-7-  
5 ((nonamethyltetrasiloxanyl)oxy))-9-((trimethylsilyl)oxy)-  
6 2,8,13-Trioxa-3,7,9-trisilapentadecan-15-ol;  
7 1,1,1,3,3,5,5,7,7,9,11,13,15,17,19,19,19-heptadecamethyl-  
8 9,11,13,15,17-pentakis(2-(7-oxabicyclo(4.1.0)hept-3-  
9 yl)ethyl)Decasiloxane;; Poly(oxy(1,1,3,3,5,5,7,7-octamethyl-  
10 1,7-tetrasiloxanediyloxy-1,3-phenylene(phenylimino)(1,1'-  
11 biphenyl)-4,4'-diyl(phenylimino)-1,3-phenylene);  
12 1,1,3,3,5,5,7,7-octamethyl-1,7-Tetrasiloxanediol,  
13 diacetate;α-(nonamethyltetrasiloxanyl)-γ-

14 ((trimethylsilyl)oxy)-  
15 poly(oxy(((diethylamino)oxy)methylsilylene)); dodecamethyl-  
16 pentasiloxane;  $\alpha$ - (nonamethyltetrasiloxanyl) -  $\gamma$ -  
17 ((trimethylsilyl)oxy)-  
18 poly(oxy(((diethylamino)oxy)methylsilylene));  
19 1,1,3,3,5,5,7,7,9,9-decamethyl-1,9-pentasiloxanediol;  
20 1,1,3,3,5,5,7,7,9,9-decamethyl-1,9-bis(4-  
21 (oxiranylmethoxy)phenyl)-pentasiloxane;  
22 1,1,3,3,5,5,7,7,9,9,11,11-dodecamethyl-1,11-bis(4-  
23 (oxiranylmethoxy)phenyl)-hexasiloxane;  
24 1,1,3,3,5,5,7,7,9,9,11,11,13,13,15,15-hexadecamethyl-1,15-  
25 bis(4-(oxiranylmethoxy)phenyl)-octasiloxane;  
26 1,1,3,3,5,5,7,7,9,9,11,11,13,13,15,15,17,17-octadecamethyl-  
27 1,17-bis(4-(oxiranylmethoxy)phenyl)-nonasiloxane;  
28 1,1,3,3,5,5,7,7,9,9,11,11,13,13,15,15,17,17,19,19,21,21,23,2  
29 3-tetracosamethyl-1,23-bis(4-(oxiranylmethoxy)phenyl)-  
30 dodecasiloxane; 4,4'-(1,1,3,3,5,5,7,7,9,9-decamethyl-1,9-  
31 pentasiloxanediyl)bis-phenol; 4,4'-  
32 (1,1,3,3,5,5,7,7,9,9,11,11-dodecamethyl-1,11-  
33 hexasiloxanediyl)bis-phenol; 4,4'-  
34 (1,1,3,3,5,5,7,7,9,9,11,11,13,13,15,15,19-hexadecamethyl-1,15-  
35 octasiloxanediyl)bis-phenol; 4,4'-  
36 (1,1,3,3,5,5,7,7,9,9,11,11,13,13,15,15,17,17-octadecamethyl-  
37 1,17-nonasiloxanediyl)bis-phenol; 4,4'-  
38 (1,1,3,3,5,5,7,7,9,9,11,11,13,13,15,15,17,17,19,19,21,21,23,  
39 23-tetracosamethyl-1,23-dodecasiloxanediyl)bis-phenol;  
40 1,1,3,3,5,5,7,7-octamethyl-1,7,-tetrasiloxanediol; 1-  
41 ethenyl-1,3,3,5,5,7,7-heptamethyl-1,7-tetrasiloxanediol;  
42 1,1,3,3,5,5-hexamethyl-7,7-diphenyl-1,7-tetrasiloxanediol;  
43 1,1,3,3,5,5,7-heptamethyl-7-(3,3,3-trifluoropropyl)-1,7-  
44 tetrasiloxanediol; 1,1,3,3,5,5,7-heptamethyl-7-phenyl-1,7-  
45 tetrasiloxanediol;

46 N,N'-(1,1,3,3,5,5,7,7,9,9,11,11-dodecamethyl-1,11-  
47 hexasiloxanediyI)di-3,1-propanediyl)bis(N-(oxiranylmethyl)-  
48 oxiranemethanamine;  
49 1,1,3,3,5,5,7,7,9,9,11,11,13,13,15,15,17,17,19,19-  
50 eicosamethyl-1,19-bis(4-(methyl-1-(4-  
51 oxiranylmethoxy)phenyl)ethyl)phenoxy)-decasiloxane; and  
52 1,1,3,3,5,5-hexamethyl-1,5-bis(4-(1-methyl-1-(4-  
53 (oxiranylmethoxy)phenyl)ethyl)phenoxy)-trisiloxane.

1       58. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 56,  
3 wherein the crosslinking agent is selected from the group  
4 consisting of zinc pyrophosphate, zinc oxide and mixtures  
5 thereof.

1       59. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 55,  
3 wherein the crosslinking agent is incorporated at a level of  
4 0.0 to 2.0 weight percent.

1       60. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 43,  
3 further comprising component (E) which is a polymer end-  
4 capped with functional groups.

1       61. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 60,  
3 wherein component (E) is selected from the group consisting  
4 of polyether diol, polysilylalcohol, polyesteramidepolyols,  
5 polyurethanepolyols, hydroxylated acrylate resins, polyester  
6 diols, aminopropyl-terminated polyethylene glycol,  
7 aminopropyl-terminated polypropylene glycol, end-capped

8 methacrylate functionalized polyethyleneglycol and  
9 epichlorohydrin derivatized polyethylene glycol.

1       62. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 61,  
3 wherein the polyether diol is selected from the group  
4 consisting of polyethylene glycol, polyethylene ether  
5 glycol, polypropylene ether glycol, polytetramethylene ether  
6 glycol, polyhexamethylene ether glycol..

1       63. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 62,  
3 wherein component (E) has a molecular weight of 600 to 4000  
4 dalton.

1       64. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 43,  
3 wherein polymer (B) is a polylactic acid in a range of 1 to  
4 60 wt% of the total composition.

1       65. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 43,  
3 wherein polymer (B) is a polyhydroxyalkanoate in a range of  
4 1 to 60 wt% of the total composition.

1       66. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 43,  
3 wherein polymer (B) is in a range of 1 to 60 wt% of the  
4 total composition and is selected from the group consisting  
5 of starch, starch derivative, cellulose, chitin, amylose,  
6 amylopectin and mixtures thereof.

1       67. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 43,  
3 wherein polymer (A) is polycaprolactam and polymer (B) is  
4 polyvinyl alcohol.

1       68. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 43,  
3 wherein the cyclic amide is caprolactam, the cyclic ester is  
4 caprolactone, the dicarboxylic acid or ester is selected  
5 from the group consisting of dimethylterephthalate and the aliphatic diol is selected  
6 from the group consisting of ethylene glycol and 1,4-  
7 butanediol.

1       69. The method for preparing a compostable and/or  
2 degradable polymer composition according to claim 62,  
3 wherein caprolactam is 20-90 wt%, caprolactone is 0-40 wt%;  
4 dimethylterephthalate is 5-40 wt%, and ethylene glycol is 5-  
5 40 wt%.

1       70. A compostable, degradable film comprising the  
2 polymer composition of claim 1.

1       71. A compostable, degradable injection molded article  
2 comprising the polymer composition of claim 1.

1       72. A degradable monofilament comprising the polymer  
2 composition of claim 1.

1       73. A compostable, degradable fiber comprising the  
2 polymer composition of claim 1.

1       74. A disposable article comprising the polymer  
2 composition of claim 1.

1       75. A compostable, degradable manufactured article  
2 comprising the polymer composition of claim 1.

1       76. A compostable, degradable manufactured article  
2 according to claim 75 which is in the form of a sphere  
3 having a diameter of between 1 micron and 50 cm and a skin  
4 thickness ranging from 0.01 micron to 2.0 mm.

1       77. A method for preparing a compostable and/or  
2 degradable sphere comprising forming a film of the  
3 compostable and/or degradable polymer composition according  
4 to claim 1 across an orifice, applying a blowing fluid at a  
5 positive pressure on an inner surface of the film and  
6 blowing the film to expand the film through the orifice and  
7 applying an external pulsating or fluctuating pressure field  
8 having periodic oscillations on an outer surface of the  
9 blown film, and detaching the sphere from said orifice.

1       78. The method according to claim 77, wherein the film  
2 of the compostable and/or degradable polymer composition has  
3 a viscosity of 0.10 to 600 poises.

1       79. The method according to claim 77, wherein the  
2 film of the compostable and/or degradable polymer  
3 composition has a viscosity of 0.5 to 100 poises.

1       80. The method according to claim 77, wherein the  
2 film of the compostable and/or degradable polymer  
3 composition has a viscosity of 100 to 400 poises.

1           81. The method according to claim 77, wherein the  
2 blowing fluid is a gas at a pressure of less than 500  
3 p.s.i.g.

1           82. The method according to claim 77, wherein said  
2 blowing fluid is a solution containing an organic compound  
3 or salt thereof.

1           83. The method according to claim 77, wherein the  
2 blowing fluid is an organic compound or salt thereof in the  
3 melt phase.

1           84. The method according to claim 83, wherein said  
2 blowing fluid is a polymer in the melt phase.

1           85. The method according to claim 77 wherein said  
2 blowing fluid blows said film downwardly through the orifice  
3 and outwardly to form an elongated cylinder shaped liquid  
4 film which closes at the orifice.

1           86. The method according to claim 77, wherein said  
2 orifice is on a coaxial nozzle having an orifice, an inner  
3 nozzle and an outer nozzle and the external pulsating or  
4 fluctuating pressure field having periodic oscillations is  
5 caused by an entraining fluid, the film is formed across the  
6 orifice of the outer nozzle, the blowing gas is conveyed to  
7 the inner surface of the film through said inner nozzle, the  
8 entraining fluid passes over and around said coaxial nozzle  
9 to dynamically induce separation of the sphere from the  
10 coaxial nozzle.

1       87. The method according to claim 77, wherein the film  
2 of the compostable and/or degradable polymer composition  
3 becomes isotropically oriented during formation of the  
4 sphere.

1       88. The method according to claim 77, wherein the  
2 sphere ranges in size from 1.0 micron to 50 cm in diameter.

1       89. The method according to claim 87, wherein the  
2 polymer is oriented isotropically by expanding the film  
3 between the glass transition temperature and the melting  
4 temperature.

1       90. A compostable and/or degradable sphere prepared by  
2 the method of claim 88.

1       91. The compostable and/or degradable sphere according  
2 to claim 90, wherein the compostable and/or degradable  
3 polymer is prepared by combining 3-8 weight% of a  
4 polyesteramide consisting of 20-40% ester units and having a  
5 melting point of less than 190 °C with 92-97 weight% of  
6 undried starch.

1       92. The compostable and/or degradable sphere according  
2 to claim 90, wherein the compostable and/or degradable  
3 polymer is prepared by combining 40-70 weight% of a  
4 polyesteramide consisting of 2-80% ester units with 30-60  
5 weight% of polyvinylalcohol and/or polyethylenvinyl  
6 alcohol, and wherein the sphere has a diameter of 2.0-6.0  
7 cm.

1        93. A method of strengthening paper comprising coating  
2 the paper with the compostable and/or degradable sphere of  
3 claim 90.

1        94. A method of strengthening paper comprising coating  
2 the paper with a sphere composed of polyethylene,  
3 polypropylene, or polylactic acid.

1        95. The compostable and/or degradable polymer  
2 composition according to claim 1, further comprising at  
3 least one of sugar, peanut butter or soybean oil to attract  
4 insects.

1        96. A compostable and/or degradable polymer  
2 composition, comprising:

3              polylactic acid;  
4              polymer (B) which is at least one polymer selected from  
5 the group consisting of polyethylenvinyl alcohol, polyvinyl  
6 alcohol, polyester, starch, starch derivative, cellulose,  
7 polyethylene glycol, chitin, amylose, amylopectin, starch  
8 derivatized with ethyleneimine, cellulose derivatized with  
9 ethyleneimine, polysaccharides derivatized with  
10 ethyleneimine, lignin derivatized with ethyleneimine,  
11 farinaceous materials derivatized with ethyleneimine and  
12 mixtures thereof;

13             component (C) which is a plasticizer; and  
14             component (D) which is a crosslinking agent;  
15             wherein the polymer composition comprises 0 to 60 wt%  
16 of polymer (B), 0 to 25 wt% of component (C), and 0 to 5 wt%  
17 of component (D);  
18             wherein all wt% values are based upon the total weight  
19 of the polymer composition; and

20 with the proviso that the polymer composition must  
21 contain at least one of polymer (B) and component (D).